REMARKS

Claims 8-26 and 28 remain in this application.

Claims 20-24 have been withdrawn as directed to non-elected species. However, since these claims depend from allowable generic claims, they should be re-instated and allowed along with the claims on which they depend.

In regard to the examiner's rejection of claims 8-19, 25-26, and 28, based on the prior art reference to Stoecklein et al, the following is again pointed out.

First and foremost, since in Stoecklein et al conduit 52 connects chamber 44 directly to the high pressure rail with no restriction, valve, or any other form of encumbrance, chamber 44 will **always** be maintained at maximum, rail pressure, see Stoecklein et al at paragraph 24. This maximum pressure, which is always maintained in chamber 44, will never allow fuel to **flow out** from control chamber 58 through conduit 62. Thus the examiner's reading of Stoecklein et al, which has fuel flowing out from control chamber 58 through conduit 62 cannot be a valid reading of Stoecklein et al. It is pointed out that none of the sections of Stoecklein et al which the examiner has referred to say that fuel flows out through conduit 62, and further, because of the maximum pressure in spring chamber 44 such a supposed flow of fuel out through conduit 62 is not possible.

The examiner, as part of his Response to Arguments, has pointed to Stoecklein et al at column 4, line 35 through column 6 line 67 as evidence that fuel will flow from control chamber 58 out through conduit 62 and up through conduit 74. **But Stoecklein et al never discloses any outflow of fuel from chamber 58 to chamber 44.** Not in the section pointed out by the

examiner, and not in any other portion of their disclosure.

Fuel can flow from spring chamber 44 to chamber 78 via conduit 74, but this is not fuel which has come from control chamber 58. Fuel flowing out from chamber 58 through conduit 62, however, is a necessary part of the examiner's reading of the Stoecklein et al reference in an attempt to make a rejection; but the disclosure of Stoecklein et al never states such flow, and such a flow simply does not happen. Pressure in spring chamber 44 is held at rail pressure by bore 52 and supply line 14 will not permit such flow to happen.

Since conduit 62 **is not** an outlet from control chamber 58, Stoecklein et al have only one outlet from control chamber 58, and that is outlet 66. Without a secondary, bypass outlet such as applicants' claimed second outlet conduit 16, the reference to Stoecklein et al cannot in any way be properly read on the structure recited in applicants' claims.

In the structure disclosed in the Stoecklein et al reference, the outlet throttle 64 is located between control chamber 58 and control valve 70, and is thus upstream of the control valve 70. The downstream part 66' of the outlet conduit 66 has a greater diameter than the throttles 64 and 86. Accordingly, outlet conduit 66 does not form an outlet throttle since it does not provide any throttling function for the outlet conduit. Thus Stoecklein et al does not have an outlet throttle as recited in claims 8 and 28.

Further, according to the disclosure of Stoecklein et al, in the intermediary and the uppermost positions of valve element 76, the valve chamber 78 is connected to high pressure via bypass conduit 74 so as to supply fuel **to control chamber 58 faster** in order to close the injection nozzle faster. Stoecklein et al discloses no communication from the control chamber

58 to the valve chamber 78 via the bypass conduit 74, and in fact there is no such communication. Among other reasons, this is because the pressure in the bypass conduit 74 is always higher than the pressure in the control chamber 58 when the valve member is in its intermediary and uppermost positions. Therefore, contrary to the reading of the Stoecklein et al reference as expressed by the examiner, in the structure of Stoecklein et al bypass conduit 74 is **not** an outlet conduit for the control chamber 58. It is, as Stoecklein et al state, an inlet for control chamber 58.

The use of the term "communication" and "providing a second, alternative flow path from the control chamber 2 to the low-pressure side" in claims 8 and 16, plus similar language in claim 28, clearly means that all of the claims include recitation of a **flow** of fuel out through the second outlet conduit 16. Thus, all the claims recite, in one way or another, that applicant's secondary conduit 16 provides a flow path for the fuel **from** chamber 2 **to** the low-pressure side, and that this is entirely more limiting than the examiner's reading of the claims.

Thus the structure recited in claim 8 differs from the structure of Stoecklein et al in that:

- claim 8 recites that the outlet throttle 8 is located downstream of the control valve 6, between the control valve 6 and the low-pressure side 7;
- claim 8 recites that the control chamber 2 communicates with the low-pressure side 7 via a second outlet conduit 16 having an outlet throttle 15 when the control valve 6 is in its third valve position.

Stoecklein et al does not teach or in any way provide this structure.

Stated in different language, the Stoecklein et al reference lacks a second conduit (16)

which communicates from the control chamber to the low pressure side. In Stoecklein et al the bypass conduit 74 does not lead from the control chamber, but rather leads from the spring chamber 44, and is part of the supply so that when valve 70 is in its uppermost position, bypass conduit 74 supplies fuel **into** the control chamber so that the injection nozzle closes faster.

While the examiner has argued that in Stoecklein inlet conduit 62 leads to conduit 74 and thus 74 could act as a second outlet conduit, this position is refuted by the fact that the high pressure maintained in spring chamber 44 by bore 52 of Stoecklein et al will always keep fuel from flowing out of control chamber 58 through conduit 62. Thus, there is no possibility that conduit 74 will act as a communication from the control chamber 58 to low pressure side 66.

The examiner's reading of the Stoecklein reference is incorrect because, since chamber 44 of the Stoecklein reference is maintained at maximum, or rail pressure by bore 52, (see paragraph 24) fuel can never flow out of the inlet 62 and then up conduit 74, and thus conduit 74 does not make a second outlet conduit for fuel to leave chamber 58 and enter chamber 78.

The examiner argues that applicant's reading of the Stoecklein et al reference is incorrect. The examiner asserts that because the nozzle needle 30 closes at the end of an injection event, this presents evidence that pressure in chamber 58 becomes higher than pressure in chamber 44. In making this assertion the examiner has missed two critical considerations. First, that the effective area of the nozzle needle by which the pressure in chamber 58 pushes downward on it may be, and probably is larger than the effective area by which the pressure chamber 44 pushes upwardly. The second consideration the examiner has missed, a point which is even more easily seen than the first, is that spring 42 pushes downwardly on nozzle needle 30 and so that even if

the pressures and areas discussed above were equal, spring 42 would push the nozzle needle down.

Closing and opening of the nozzle needle 30 of the Stoecklein et al reference depends on the difference of forces acting on the nozzle needle 30, such as the forces acting on areas 56, 72, and 32, on which the pressure acts, see paragraph [0027], in combination with the force from spring 42. It does not depend only on the pressure as stated by the examiner on pages 5 and 6 of the Office action.

Furthermore, the function of the throttles 60, 64, and 86 of the Stoecklein et al reference is to prevent rapid pressure compensation from high pressure side (44,52, 74) to low pressure side (66). Stoecklein et al discloses that the control chamber 58 and the valve chamber 78 are connected only by the outlet throttle 64. As stated in paragraphs [0037] to [0046], the function of Stoecklein is as follows: if the valve element 76 is in its shown intermediate position, both outlet conduit 66 and bypass conduit 74 are connected to the low-pressure side via the valve chamber 78 without any interaction between outlet conduit 66 and bypass conduit 74. If the valve element 76 is in its lower end position, control chamber 58 is connected to the high-pressure side only by the inlet throttle 60. And if the valve element 76 is in its upper end position, control chamber 58 is connected to and fuel flows in from the high-pressure side by both the inlet throttle 60 and the bypass formed by the bypass conduit 74, valve chamber 78 and outlet conduit 66. Compared with the lower end position of the valve element 76, the filling of the control chamber 58 is accelerated in the upper end position, see Stoecklein et al at paragraph [0041].

In the application, control chamber 2 and the valve chamber 10 are connected by both the throttle 14 and the second conduit 16 to realize different pressure reductions on the control chamber 58 if the control valve 6 is in its second or third position.

On page 6 of the action the examiner has again repeated his reasoning that if a dye indicator was put into the fuel system, the dye indicator would be present in each part of the Stoecklein et al reference, and that this shows communication between them. But this is different from the structure as recited in each of the independent claims of this application. Each of independent claims 8, 16 and 28 recite, in one way or another, "a second outlet conduit having an outlet throttle"; "a second, alternative flow path"; and/or "whereby .... fuel **flows** from control chamber (2) to the low pressure side (7) through the second outlet conduit(16) and its outlet throttle (15)". In addition to Stoecklein et al not teaching the recited structure, the examiner's indication of the dye indicator being present **is not** indicative of fuel **flowing** as recited in the claims. At best, according to the examiner's position, if the system of Stoecklein et al were maintained at equilibrium, i.e. that no injections were taking place, the pressures in control chamber 58 would increase via fuel flowing inwardly through conduit 62, and control chamber 58 would eventually reach the same pressure as spring chamber 44. At this point, some molecular action might cause some molecules to pass backwards through conduit 62, but an equal number would pass inward through the conduit. This is an extremely stretched meaning for the term **flow** of the fuel. And moreover, as used in the present claims, clearly the term cannot be understood to mean anything other than an actual flow of fuel through the second, alternative conduit. The term does not, as argued by the examiner, encompass only chance

molecular vibrations of the individual fuel molecules.

Further, since there are no references of record which teach the structure recited in applicant's claims, there certainly is no teaching of record which would in any way make the structure recited in the claims obvious to one skilled in the art.

Since the present rejection of claim 8 has been shown to be inappropriate, and thus generic claim 8 is allowable, it is proper to reinstate non-elected claims 20-24, and allow them along with allowable claim 8, on which they ultimately depend.

For the above reasons, reconsideration and allowance of all of the claims in this application are courteously solicited.

Respectfully submitted,

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